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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No.	Applicant(s)
	10/822,488	TOGASHI, HARUO
	Examiner	Art Unit	
	Jonathan R. Plante	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 March 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-9</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-9</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>08 March 2007</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☒ All   b)☐ Some * c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the applicant's communication filed 8 March 2007 in response to PTO Office Action mailed 11 December 2006. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.

2. Claims 1-9 have been presented for examination in this application. As a result, claims 1-9 are now pending in this application.

Drawing Amendments

3. Acknowledgement of receiving replacement drawings, which were received by the Office on 8 March 2007. These drawings are Figures 1, 6, 7, and 13. The drawings are accepted by the Examiner.

The objections to the drawings have been withdrawn due to amendment filed on 8 March 2007.

Specification Amendments

4. Acknowledgement of receiving amendments to the specification, which were received by the Office on 8 March 2007.

The Examiner accepts the new title. The objection to the title has been withdrawn due to the amendment filed 8 March 2007.

The Examiner accepts the new abstract. The objection to the title has been withdrawn due to the amendment filed 8 March 2007.

The Examiner accepts the amended specification. The objections to the specification have been withdrawn due to the amendment filed 8 March 2007.

Claim Amendments

5. Acknowledgment of receiving amendments to the claims, which were received by the Office on 8 March 2007 Claims 1-6 are amended and claims 7-9 are new.

The objections to claims have been withdrawn due to the amendment filed on 8 March 2007.

The **35 U.S.C. 112**, second paragraph rejections to claims 1, 4, and 6 have been withdrawn due to the amendment filed on 8 March 2007.

Response to Arguments

6. Applicant's arguments, see "Response to Office Action" (Page 12), filed 8 March 2007, with respect to Claims 1-6 (Filed 12 April 2004) have been fully considered and are persuasive. The rejections of Claims 1-6 (Filed 12 April 2004) have been withdrawn.

Examiner acknowledges in view of Applicants remarks that Sano et al. fails to disclose the element associated with "removing a predetermined number of bit planes" from the total number of bit planes in order to standardize the number of bit planes being loaded into the encoders and to standardize the processing time between the encoders in order to maintain synchronization (flow) between the encoders.

As for Claim 7, it fails to disclose "removing a predetermined number of bit planes" and "a quantity of generated codes per frame kept constant" and as result is not distinguishable over Sano et al. Additionally, Claim 7 as a result is broader in scope then Claim 1 and 4.

The Examiner also affirms that Sano et al. does disclose all the other limitations claimed by Applicant, and that Applicant has not argued otherwise. (MPEP 714.02 [R-3]).

Claim Objections

7. Claims 2, 3 are objected to because of the following informalities:

    a. (Claim 2, Line 2): Please replace **"the first quantity"** with "the

      predetermined number" to resolve potential lack of antecedent basis

      issue.

    b. (Claim 3, Line 2); Please replace **"the second quantity"** with "the

      quantity" to resolve potential lack of antecedent basis issue and since

      there is no first quantity of generated codes as recited in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed
> publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9. Claim 7 is rejected under 35 U.S.C. 102(a) as being anticipated by Sano et al. (US

2003/0002742 A1 January 2, 2003).

(Claim 7) Sano et al. discloses, "An encoder, comprising: a video input section for

receiving picture data **["an input/output (I/O) section 111 for inputting image**

data" (Paragraph 0152)] and separating the picture data into data components;

["FIG. 4 is a diagram showing an example of each component of a color image

divided into tiles." (Paragraph 0021)] a wavelet converter for receiving the data

components from the video input section and dividing the data components into

frequency components; ["a two-dimensional wavelet transform (forward

transform) in the two-dimensional wavelet transform section 51 and spatially

divided into frequency bands." (Paragraph 0021)] a quantizer for quatizing the

frequency components received from the wavelet converter; ["a quantization and

inverse quantization section 52" (Paragraphh 0010)] a bit plane converter for

receiving the quantized frequency components supplied from the quantizer and

dividing the quantized frequency components into code blocks, the bit plane

converter further dividing the code blocks into a plurality of bit planes; ["the

JPEG2000 decomposes the coefficient values into bit-plane units, and the bit-

planes may be ordered for every pixel or code block." (Paragraph 0027)] a rate

controller for performing a rate control so that only necessary bit planes are sent to a

register; ["a controller 110" (Paragraph 0152), "The quantization rate selector

106" (Paragraph 0161), and "FIG. 33 includes an image memory 101"

(Paragraph 0152)] a plurality of bit model sections, each bit model section receiving

a corresponding one of the necessary bit planes from the register and creating a

context based on the received necessary bit plane; ["'Decomposition Level": A

collection of wavelet subbands where each coefficient has the same spatial

impact or span with respect to the source component samples. These include

the HL, LH, and HH subbands of the same two-dimensional subband

decomposition. For the last decomposition level the LL subband is also

included. (Paragraph 0018) and **"Decomposition_Level_1" (Figure 6)]** a plurality

of arithmetic encoders, each arithmetic encoder performing an entropy encoding

["The entropy coding section 108 carries out a known coding process in the

step S33" (0170), "The processes of the first, second and third components

11, 12 and 13 are carried out in parallel" (Paragraph 0113) and "ENTROPY

CODING & DECDOING" (Figure 17, Index 11e, 12e, and 13e)] and calculating

generation probabilities for the context to create encoded streams; **["The code**

stream processing section 109 generates a code stream in a step S34"

(Paragraph 0170)] and a format generator for rearranging the encoded streams and

adding additional information to the encoded streams to create data streams, the

format generator outputting the data streams." **["Finally, the tag processing**

section 54 carries out a process of connecting all code data from the entropy

coding section 53 into one code stream and adding a tag to this code stream."

(Paragraph 0032) and "an input/output section 112 for outputting compressed

image data" (Paragraph 0152)].

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth
> in section 102 of this title, if the differences between the subject matter sought to be patented and the
> prior art are such that the subject matter as a whole would have been obvious at the time the invention
> was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sano et al. (US 2003/0002742 A1 January 2, 2003), and further in view of Liang et

al. (US 5,790,131 August 4, 1998).

Sano et al. and Liang et al. are from the same field of endeavor of image/video

compression using the JPEG standards and lossy compression to reduce

image/video size in electronic devices.

(Claims 1 and 4) Sano et al. teaches:

    a. "An encoder" as **"an image compression apparatus"** (Abstract and

       Figure 33)

    b. "A filtering generation means" as **"integer transform filter"** (Paragraph

       0029 and Figure 33)

    c. "for generating a filtering coefficient" as **"obtaining the wavelet**

       coefficient values" (Paragraph 0029 and Figures 1, 33)

    d. "inputted picture data" as **"an input/output (I/O) section 111 for**

       inputting image data" (Paragraph 0152 and Figure 33)

    e. "division means for dividing the filtering coefficient into plural bit planes"

       as **"an image dividing section dividing the image using the specified**

       rectangular tiles, a bit-plane decomposing section decomposing

       each of the specified tiles dividing the image into bit-planes"

       (Abstract and Figure 4)

f. "an uppermost bit to a lowermost bit of each pixel" as **"The layer which includes a bit-plane closer to the LSB becomes the quantizing target earlier, and the layer including the bit-plane closer to the MSB becomes the quantizing target later and remains unquantized to the last"** (Paragraph 0030)

g. "outputs the remaining bit planes in parallel" as **["FIG. 17 is a system block diagram showing a first embodiment of an image compression and/or expansion apparatus according to the present invention. The image compression and/or expansion apparatus shown in FIG. 17 includes a color space transform and inverse transform section 10, a first component 11, a second component 12, a third component 13, and a code stream processing section 14."** (Paragraph 0111) *[Figure 17 discloses three parallel apparatus for performing the disclosed operations listed as elements 11, 12, and 13.]*

h. "removing a predetermined number of bit planes ... from a lower side" as **"The method of discarding the layer closer to the LSB is called truncation, and the quantization rate can finely be controlled by this truncation."** (Paragraph 0030)

i. "a plurality of encoding means for encoding the bit planes outputted in parallel form the read control means" as **["The processes of the first, second and third components 11, 12 and 13 are carried out in parallel"** (Paragraph 0113), *Figure 17 discloses three parallel*

> ***apparatus for performing the disclosed operations listed as elements***
>
> ***11, 12, and 13].***

j. ***The Examiner additional refers to Sano et al. as disclosing the JPEG***

> ***and JPEG2000 compression and expansion algorithm. (Paragraph***
>
> ***0008) and also that the JPEG and JPEG2000 standard support lossy***
>
> ***compression.***

However, Sano et al. fails to teach the application of the "read control means" being

able to determine "a predetermined number of bit planes" to remove from the bit

planes "so that a quantity of generated codes per frame is kept constant".

Liang et al. teaches:

a. "read control means" as **"File or compressed representation size**

> **evaluator 16 measures the size of the compressed representation**
>
> **and provides the size to parameter generator 18."** (Column 8, Line 47-
>
> 65) *The Examiner is also including the* **"COST PARAMETER**
>
> **ADJUSTER" (Figure 1, 20), "PARAMETER GENERATOR" (Figure 1,**
>
> **18), and "FILE SIZE EVALUATOR" (Figure 1, 16)** *as part of the "read*
>
> *control means".*

b. "for removing a predetermined number of bit planes" as **"a**

> **predetermined target file size"** (Abstract) and **"the size of the**
>
> **compressed representation must be constrained to an upper limit so**
>
> **that the compressed representation complies with the restraints of a**

communication conduit." (Column 4, Line 28) *The Examiner is equating removing a predetermined number of bit planes to a predetermined file size in that both elements disclose that there is a limit on the size of data and that the excess data is removed to meet the specific data limit by removing bit planes in accordance with the JPEG lossy standard.*

c. "so that the quantity of generated codes per frame is kept constant" as "video sequence ... the time available for compression is generally limited to the time between frames. Another constraint is that the source of the frames produces the frames at a fixed number of frames per unit of time." (Column 4, Line 32) *The Examiner has evaluated the application of encoding a real-time video application as requiring that the encoding process maintain a constant processing rate sufficient to encode the video in real-time.*

The motivation to combine Sano et al. with Liang et al. is disclosed in Liang et al. with **"if the compressed representation of a data set being compressed is to be communicated across a communication conduit to another site, the compressed representation needs to be of a size that corresponds to the bandwidth of the communication conduit."** (Column 1, Line 49). As a result it would have been obvious to combine Sano et al. compression apparatus with the

ability of Liang et al. to limit, on the transmission side, the file size of compressed

data that is communicated across a communication network.

(Claims 2 and 5) Sano et al. discloses, "The encoder according to claim 1, wherein

the read control means removes the first quantity of bit planes, from the lower side

and from the lower hierarchical level, from bit planes stored in storage means" as

["The method of discarding the layer closer to the LSB is called truncation,

and the quantization rate can finely be controlled by this truncation"

(Paragraph 0030), "layer forming step forming layers by the ordered bit-

planes; and a suppressing step suppressing a quantization rate of a region

low relative to other regions of the image" (Paragraph 0064), "The bit-plane of

the tile boundary vicinity region where the quantization rate is to be relatively

suppressed to a low value" (Paragraph 0145), and "The quantization rate may

be reduced in arbitrary units. For example, the quantization rate may be

reduced in units of coefficients (pixels), units of code blocks or, in units of

subbands" (Paragraph 0167)].

(Claim 3) Sano et al. discloses, "The encoder according to claim 1, further

comprising rate control means for feeding forward in order that the second quantity

of generated codes per frame is kept constant based on results of the encoding

process of the plural encoding means" as **["The processes of the first, second**

and third components 11, 12 and 13 are carried out in parallel" (Parallel 0113),

"a code stream processing section 109, <u>a controller 110</u>, an input/output (I/O)

section 111 for inputting image data, an input/output section 112 for

outputting compressed image data, and a CPU 113 which are connected via a

bus 114"(Paragraph 0152), "The quantization rate selector 106" (Paragraph

0161) and **Figure 33]**.

(Claim 6) Liang et al. discloses, "The encoding method according to claim 4, further

comprising setting the predetermined number of bit planes removed in the removing

step which is necessary to keep the quantity of generated codes per frame constant,

based on results of the performed encoding processing, **[See independent Claim 4**

rejection] the thereafter feeding back the predetermined number of the removing

step." **["Such a system adapts the cost parameter to the data being**

compressed by the system so the compressed representations generated by

the system correspond to a target range while maintaining regenerated data

set fidelity to the data set." (Column 7, Line 1), "File or compressed

representation size evaluator 16 measures the size of the compressed

representation and provides the size to parameter generator 18. Parameter

generator 18 then uses the cost parameter and the compression

representation size resulting from the use of the cost parameter to generate

parameters for a parameterized non-linear relationship. Using a target size and

the generated parameters, the cost parameter may be adjusted for

compression of a data set or data set component." (Column 8-9, Line 65-6) and

"COST PARAMETER", "PARAMETER GENERATOR", "FILE SIZE

EVALUATOR" (Figure 1, Index 20, 18, 16)].

(Claim 8) Sano et al. teaches:

    a. "the rate controller" as **"a controller 110"** (Paragraph 0152) and **"The**

        quantization rate selector 106" (Paragraph 0161).

However, Sano et al. fails to teach the application of removing "a predetermined

quantity of bit planes".

Liang et al. teaches:

    1. "for removing a predetermined number of bit planes" as **"a**

        predetermined target file size" (Abstract) and **"the size of the**

        compressed representation must be constrained to an upper limit so

        that the compressed representation complies with the restraints of a

        communication conduit." (Column 4, Line 28) *The Examiner is*

        equating removing a predetermined number of bit planes to a

        predetermined file size in that both elements disclose that there is a

        limit on the size of data and that the excess data is removed to meet

        the specific data limit by removing bit planes in accordance with the

        JPEG lossy standard.

(Claim 9) Laing et al. discloses: "The encoder of claim 8, wherein the predetermined quantity of bit planes is determined such that the arithmetic encoders encode substantially the same amount of generated codes." as **["Target size is initialized to a mid-point value between the minimum and maximum file size to establish a target range. (Column 11, Line 5)]**.

Conclusion

14. The examiner requests, in response to this Office action, support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line number(s) in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan R. Plante whose telephone number is

(571) 272-9780. The examiner can normally be reached on Monday -- Friday 10:00

AM to 4:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kim Huynh can be reached on (571) 272-4147. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-

8300.

16. Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from

a USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 18, 2007   Jonathan Plante
JRP   ART UNIT 2182

KIM HUYNH
SUPERVISORY PATENT EXAMINER

4/30/07